

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DIETER ARABIN

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Appeal 2007-3305  
Application 10/031,322  
Technology Center 3600

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Decided: November 29, 2007

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Before WILLIAM F. PATE III, TERRY J. OWENS and JOHN C. KERINS,  
*Administrative Patent Judges.*

KERINS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Dieter Arabin (Appellant) seeks our review under 35 U.S.C. § 134 of the final rejection of claims 4-7 under 35 U.S.C. § 102(b). We have jurisdiction under 35 U.S.C. § 6(b) (2002).

## SUMMARY OF DECISION

We ENTER A NEW GROUND OF REJECTION UNDER 37 C.F.R.  
§ 41.50(b), and AFFIRM.

## THE INVENTION

Appellant's claimed invention is to a drive bearing for coupling a rotating tool to a drive shaft, especially for use in printing machines. Claims 4 and 7, reproduced below, are representative of the subject matter on appeal.

4. A drive bearing for printing machines for coupling a rotating tool to a drive shaft of a servomotor, the drive bearing comprising:

an element located at an interface between the rotating tool and the drive shaft on a tool axis,

the element having an axially projecting coupling cone that engages a counter recess of the drive shaft, the cone being releasably held in the recess by frictional engagement of the surface of the cone with the surface of the recess,

wherein an angular position of the element is adjustable, and wherein the element is centered and configured to be secured to prevent rotation.

7. A drive bearing for printing machines for coupling a rotating tool to a drive shaft of a servomotor, the drive bearing comprising:

an element located at an interface between the rotating tool and the drive shaft on a tool axis;

the element having an axially projecting coupling cone that engages a counter recess of the drive shaft, the cone

tapering down in the direction towards the drive shaft and being releasably held in the recess by frictional engagement of the surface of the cone with the surface of the recess;

an undercut on an inner bore of the coupling cone of the element; and

a tensioning rod having a spreading head, the rod configured to extend through the drive shaft of the servomotor so that the cone frictionally engages the counter recess in the drive shaft so as to provide a releasable holding of the coupling cone,

wherein an angular position of the element is adjustable, and wherein the element is centered and configured to be secured to prevent rotation.

#### THE REJECTION

The Examiner relies upon the following as evidence of unpatentability:

Luebke

5,137,495

August 11, 1992

The following rejection is before us for review:

1. Claims 4-7 stand rejected under 35 U.S.C. §102(b) as anticipated by the Luebke patent.

#### ISSUES

The issue initially raised in this appeal is whether Appellant has shown that the Examiner erred in rejecting Claims 4-7 under 35 U.S.C. §102(b) as anticipated by Luebke. This issue calls for a determination as to whether Appellant has established that the Luebke patent does not disclose one or more limitations set

forth in these claims, and, in particular, whether Appellant has shown that Luebke fails to disclose the use of a “coupling cone”, or that the coupling cone is not releasably held in a counter recess by frictional engagement of these members. A further issue that we find to exist is whether the scope of the claim term “cone” is indefinite, in view of Appellant’s disclosure.

### FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. The ordinary meaning attributed to the term “cone” is a “surface generated by a straight line, the generator, passing through a fixed point, the vertex, and moving along a fixed curve, the directrix”, and, a “figure formed by a cone, bound or regarded as bound by its vertex and a plane section taken anywhere above or below the vertex.” (*The American Heritage® Dictionary of the English Language, Fourth Edition*. Houghton Mifflin Company, 2004)

2. The drawings forming a part of Appellant’s application do not illustrate a “cone”, in accordance with the ordinary meaning of that term, in that the “cone” element 20 does not have at least a vertex. (Appellant’s application, Figs. 2, 3)

3. The specification and claims employ the terms “coupling cone”, “connecting cone” and “cone” throughout, but the specification says nothing

further regarding what the term “cone” is intended to encompass. (*See, e.g.*, Spec. p. 3, l. 14- p. 4, l. 22).

4. Claim 7 contains the sole written expression describing in any further detail a characteristic of the claimed “coupling cone”. Claim 7 sets forth that the cone, “taper[s] down in the direction toward the drive shaft”. (App. Br., Claims Appendix)

5. The projection or “cone” 20 in Appellant’s invention is intended to be mated, in frictional engagement, with a counter recess in a drive shaft, to couple a tool to the drive shaft. (Spec., p. 4, ll. 2-4, 9-10)

6. The Luebke patent discloses a projection element (coupling extension 6) having outer opposed surfaces which taper inwardly toward one another. The outer surfaces do not taper fully to a vertex or point of intersection. (Luebke, Fig. 1)

7. The Luebke patent discloses a frictional engagement of coupling extension 6 with a complementary shaped recess in head 10, such that the coupling extension and recess are interlocked. (Luebke, Col. 2, ll. 16-19; Col. 3, ll. 34-36; Fig. 1)

8. The term “backlash”, as used in relation to machinery, is defined as, “play or lost motion between loosely fitting machine parts”. *Dictionary.com Unabridged (v 1.1)*. Random House, Inc. 08 Nov. 2007.  
<http://dictionary.reference.com/browse/backlash>.

## PRINCIPLES OF LAW

The test for definiteness under 35 U.S.C. § 112, second paragraph, is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted). “All words in a claim must be considered in judging the patentability of that claim against the prior art. If no reasonably definite meaning can be ascribed to certain terms in the claim, the subject matter does not become obvious - the claim becomes indefinite.” *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970).

In some instances it may be impossible to determine whether or not claimed subject matter is anticipated by or would have been obvious over references because the claims are so indefinite that considerable speculation and assumptions would be required regarding the meaning of terms employed in the claims with respect to the scope of the claims. *See In re Steele*, 305 F.2d 859, 862 (CCPA 1962). In other instances, however, it is possible to make a reasonable, conditional interpretation of claims adequate for the purpose of resolving patentability issues to avoid piecemeal appellate review. In the interest of administrative and judicial economy, this course is appropriate wherever reasonably possible. *See Ex parte Saceman*, 27 USPQ2d 1472, 1474 (Bd. Pat. App. & Int. 1993); *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. App. 1984).

Anticipation of a claim exists when each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed.

Cir. 1987), *cert. denied*, 484 U.S. 827 (1987); *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349 (Fed. Cir. 2002). Once a prima facie case of anticipation has been established, the burden shifts to the Appellant to prove that the prior art product does not necessarily or inherently possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977); *In re Spada*, 911 F.2d at 708-09.

Patent application claims are given their broadest reasonable interpretation during the application process, for the simple reason that before a patent is granted the claims may be readily amended, for the purpose of distinguishing cited references, or in response to objections raised under Section 112, as part of the examination process. *Burlington Industries, Inc. v. Quigg*, 822 F.2d 1581, 1583 (Fed. Cir. 1987). This broadest reasonable construction is to be assessed in light of the specification as it would be interpreted by one of ordinary skill in the art. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (*en banc*).

## ANALYSIS

*Rejection under 35 U.S.C. § 112, second paragraph (indefiniteness)-New Ground of Rejection*

### Claim Interpretation

We enter the following new ground of rejection, under the provisions of 37 C.F.R. § 41.50(b):

Claims 4-7 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter Appellant regards as his invention.

Independent Claims 4 and 7 each recite an element having an axially projecting “coupling cone”. (App. Br., Claims Appendix) The coupling cone is recited as engaging a counter recess in a drive shaft.

A significant issue, namely, what meaning is to be given to, or what scope or range is to be afforded to, the claim term “cone”, quickly becomes apparent when assessing the respective positions taken by the Examiner and Appellant in connection with the rejection under 35 U.S.C. § 102(b) on appeal.<sup>1</sup> The importance of the issue is highlighted by the fact that this is one of only two principal issues joined by the Examiner and Appellant in the § 102(b) rejection.

This issue arises because the drawing figures accompanying Appellant’s application do not illustrate the axially projecting member as a “cone”, as that term is commonly understood. (Findings of Fact 1, 2) A “cone” is a shape that converges to a point, vertex or apex. (Finding of Fact 1). In contrast, the projecting member, or “cone” 20, illustrated in the instant application has an outer surface which exhibits a shallow inward taper. The projecting member has no vertex or apex. (Appellant’s application, Figs. 2 and 3)

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<sup>1</sup> The Examiner has cited to the coupling extension 6 in the Luebke patent as disclosing a coupling cone. Appellant argues that the coupling extension 6 is not a coupling cone, because there is no disclosure that the “coupling extension 6 may be or have the shape of ‘a cone.’” (App. Br. 5)



Further, the specification contains no explanatory language as to what particular shapes are intended to be encompassed by the claimed “cone”. (Findings of Fact 3, 4) All references in the specification to the “cone” or “coupling cone” use only the term “cone”, as though it were self-defining, or as though the shape of the axially projecting portion would have the shape of a cone, according to the commonly accepted meaning of that term.

Because Appellant’s disclosed “cone” does not comport with the term “cone” in its ordinary and commonly understood meaning, we are left to determine, if possible, whether Appellant’s disclosure as a whole can impart sufficient definiteness to the term “cone” such that the intended scope and meaning would be clear to those of ordinary skill in the art. It can reasonably be concluded, based on the fact that the term “cone” generally connotes shape (Finding of Fact 1), that Appellant’s use of the term “cone” in the claims is intended to impose some shape limitation to the claimed axial projection, while, having regard to Appellant’s drawings, not limiting the shape to that of a true “cone”.

Appellant provides no written explanation as to exactly how or why the illustrated projection 20 is regarded by Appellant as a “cone”. (Finding of Fact 3) In particular, Appellant does not point out what characteristics that the projection 20 must have in common with a true “cone”, and what characteristics can be omitted or dispensed with, and still have the projection fall within the intended scope of the claim limitation calling for a “coupling cone”.

As noted previously, the drawing figures are indicative that Appellant intended that the claimed “coupling cone” not be limited to structures that come to

a point or have an actual vertex. The only other physical characteristic of the projection that is actually shown in Appellant's Figures 2 and 3, is that the projection or "cone" 20 is to have opposing inwardly tapering outer walls.<sup>2</sup>

The intended function of the projection or "cone" 20 is that it is to be mated with a counter recess in a drive shaft, to hold the drive shaft and the element having the projection thereon in frictional engagement. (Finding of Fact 5) As such, and in view of Appellant's drawing figures, as discussed above, it is reasonable to conclude that the claim term "cone" would encompass a projection that need not terminate at a point or vertex, and would have an outer surface or surfaces that are inwardly tapered. Claim 7 specifically calls for the "coupling cone" to be tapered down in a direction of the drive shaft.

We find, however, that this level of specificity does not reasonably or adequately inform persons of ordinary skill in the art as to the universe of shapes that would or might be included within the scope of the claims, and thus would not provide such persons with notice as to what structural shapes would or would not be encompassed by this limitation. *All Dental Prodx LLC v. Advantage Dental Products Inc.*, 309 F.3d 774, 779-80 (Fed. Cir. 2002) (primary purpose of the definiteness requirement is to ensure that the claims are written in such a way that

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<sup>2</sup> The drawings in the cited Luebke patent illustrate the danger in assuming that the drawings show any more or any less than they actually do. The cross-section of element 6 shown in Fig. 1 [of Luebke] has a cross-sectional shape whose outer surface is substantially the same (inwardly tapered) as the outer surface of Appellant's illustrated "cone". It can be seen, however, in viewing Fig. 4 of Luebke, that element 6 is not symmetrical through a 360° rotation about the drive shaft. As such, and in the absence of any guidance in Appellant's specification, we will not speculate as to the overall shape of the projection in Appellant's invention.

they give notice to the public of the extent of the legal protection afforded by the patent, so that others can determine whether or not they infringe)

This very scenario is present in the record before us, in the context of assessing the novelty of the claimed invention in view of cited prior art. The Examiner takes the position that, “element 6 of Luebke is shaped as a cone at least to the extent of the cone 20 shown and described in the instant application.” (Ex. Ans. 4) Appellant essentially replies that Luebke does not disclose a cone, relying on the common meaning or understanding of that term. Appellant correctly points out that Luebke discloses a projection which is trapezoidal in cross-section. Appellant further explains that the term trapezoid is defined generally as, “a quadrilateral having two parallel sides”, and notes that this is consistent with the coupling extension shown in Figure 1 of Luebke. On this basis, Appellant would have us conclude that the Luebke patent does not disclose a “cone”.<sup>3</sup>

We mention this scenario in discussing the indefiniteness of the claim term “cone”, to highlight that, in the absence of using the term in accordance with its commonly understood meaning, and in the absence of any other defining or explanatory language, there are and would be numerous similar situations that would require the same type of *post hoc* analysis attempted here by Appellant. Appellant provides literally no guidance (Finding of Fact 3) to those of ordinary skill in the art as to what attributes a projection should have in common with a true

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<sup>3</sup> What Appellant fails to appreciate or address, ironically, is that frustoconical shapes (likely to be Appellant’s vision of what his term “cone” encompasses) also appear, in cross-section, as being trapezoidal.

“cone”, and what attributes could differ from a true “cone” shape, and be regarded as falling within (or, conversely, outside) the scope of this claim limitation.

We find that we are unable to determine, from the record before us, what the proper scope of the term “cone” is and is intended to be, to any reasonable degree of certainty. We therefore conclude that Claims 4-7, all of which include this term, are unpatentable under 35 U.S.C. § 112, second paragraph, as being indefinite.

*Rejection under 35 U.S.C. § 102(b)*

Claims 4-7 on appeal were rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by the Luebke patent. Appellant argues on appeal that the invention set forth in the claims is not anticipated, because (a) Luebke does not disclose or suggest an element having an axially projecting coupling cone that engages a counter recess of the drive shaft; and (b) Luebke does not disclose or suggest that the coupling cone is releaseably held in the recess by frictional engagement of the surface of the cone with the surface of the recess. (App. Br. 5, ll. 5-12)

Claims 4 and 7 are each independent claims, however, Appellant has made no allegations of reversible error in the claim rejections that evidence that these claims are to be treated as being separately patentable. As such, we will treat these claims as standing or falling together. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2007). Claims 5 and 6 depend from Claim 4, and Appellant has implicitly acknowledged that these claims will stand or fall with Claim 4. (App. Br. 7)

Notwithstanding our ruling that the claims on appeal are unpatentable as being indefinite, we have concluded that, in this instance, it is possible to make a reasonable, conditional interpretation of the claims adequate for the purpose of resolving other patentability issues, to avoid piecemeal appellate review. *Ex parte Saceman*, 27 USPQ2d at 1474.

As noted in the preceding section, Appellant's original disclosure does not limit the meaning of "cone" to a true definitional cone shape. Our conditional interpretation is that "cone" encompasses shapes in which outer opposed surfaces taper inwardly toward one another, as illustrated in Figs. 2 and 3 of Appellant's application. The outer surfaces need not taper fully to a vertex or point of intersection. Applying this conditional interpretation to Claims 4-7, we find that the Luebke patent discloses a "coupling cone", to wit, coupling extension 6. (Finding of Fact 6)

Appellant takes issue with the Examiner's treatment of one other limitation found in the claims on appeal, namely a limitation calling for the "cone" to be releaseably held in the recess by frictional engagement of the surface of the cone with the surface of the recess". (App. Br., Claims Appendix) More specifically, Appellant contends that, (1) the Examiner has erred in finding and concluding that the projection element 6 in Luebke is in frictional engagement with a complementary-shaped recess in receiving head 10, and, alternatively, (2) that the Examiner has erred in finding that Luebke provides a sufficient or specific amount of friction such that element 6 is held in receiving head 10 by frictional engagement.

We believe that it is beyond argument that the Luebke patent discloses that the surface of the projection element 6 is in frictional engagement with the surface of the recess in head 10. (Finding of Fact 7) Luebke states that, “drawhead 24 ... firmly pulls the coupling part 4 against the receiving head 10.” (Luebke, Col. 3, ll. 34-36) Luebke describes this connection as one which “interlocks” the recess and complementary projection on the coupling part. (Finding of Fact 7)

In addition, Figure 1 of Luebke illustrates that the surfaces of the projection element 6 are in direct contact with the walls of the recess in head 10. The Examiner has further noted, without dispute by Appellant, that these elements must be in direct contact in order for the drive bearing to be operable. (Answer 4) Were these elements not in frictional engagement, the drive shaft would not turn the printing cylinder.

Appellant’s alternative contention is that Luebke does not disclose that the projection element 6 of coupling part 4 is held in the recess by frictional engagement of the surface of the projection and the surface of the recess. Appellant asserts that, in Luebke, “such holding is described as being accomplished *solely* by the interaction of spring 22, the outwardly protruding flange 9 and the gripping jaws 7, and not by any frictional engagement of the coupling extensions 6 and the tapering recess of the receiving head.” (App. Br. 6) (emphasis in *italics* added)

We disagree. Luebke characterizes the coupling of the projection and the recess as an “interlock[ing]” connection. (Finding of Fact 7) This connotes an engagement of these components by friction such that they will operate in unison.

Appellant's assertion that Luebke discloses holding the components together solely by the jaws 7 gripping the flange 9 is not supported by the Luebke disclosure. Luebke expressly states that, "[B]y the gripping jaws, the interlocking coupling parts [member formed with trapezoidal aperture and complementary portion of coupling part] are forced against each other so that an effective and backlash-free coupling of the shafts to be coupled is ensured." (Luebke, Col. 2, ll. 21-24) This passage makes clear that these interlocking coupling parts have no play or lost motion between them ("backlash-free coupling", *see* Finding of Fact 8), and are thus held by this engagement against relative movement due to the mating surfaces having been forced against each other.<sup>4</sup>

It is further uncontested that Appellant's claims do not require that frictional engagement between the cone and the recess be the only holding force between those elements. (Answer 5) Thus, to the extent that the Luebke jaws 7 contribute to holding the interlocking coupling parts together, that alone does not require a finding that the claims on appeal are not anticipated.

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<sup>4</sup> That Luebke uses an additional component (jaws 7 gripping flange 9) to aid in forcing the tapered surfaces into contact does not compel a finding that the elements are not held in frictional engagement. Indeed, Appellant obtains frictional engagement though the use of an additional component, *i.e.*, a tensioning rod with spreader head that is inserted into the projecting member to expand the walls of the cone, "so that the cone frictionally engages the counter recess in the drive shaft so as to provide a releasable holding of the coupling cone...". (App. Br., Claims Appendix, Claim 7) In Appellant's device, as in the Luebke device, the additional component is creating or enhancing a frictional engagement between a tapered projection member and a correspondingly tapered wall.

Accordingly, we conclude that Appellant has not shown that the Examiner erred in finding and concluding that the claimed invention is anticipated by, and is unpatentable over, the Luebke patent.

### CONCLUSIONS OF LAW

We conclude that Appellant has failed to establish that reversible error exists in the rejection of Claims 4-7 under 35 U.S.C. § 102(b). We further conclude that Claims 4-7 are unpatentable as being indefinite, and thus do not meet the requirements of the second paragraph of 35 U.S.C. § 112.

### ORDER

The decision of the Examiner to reject Claims 4-7 is affirmed.

We enter a new ground of rejection of Claims 4-7 under 35 U.S.C. § 112, second paragraph, pursuant to our authority under 37 C.F.R. § 41.50(b). That section provides that, “[A] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

Regarding the affirmed rejection, 37 C.F.R. § 41.52(a)(1) provides that, “[A]ppellant may file a single request for rehearing within two months from the date of the original decision of the Board.”

Regarding the new ground of rejection, Appellant must, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, exercise one of the following options with respect to the new ground of rejection, in order to avoid termination of the appeal as to the rejected claims:



(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . ; or

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should Appellant elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If Appellant elects prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).<sub>2</sub>

AFFIRMED; 37 C.F.R. § 41.50(b)

vsh

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Appeal 2007-3305  
Application 10/031,322

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